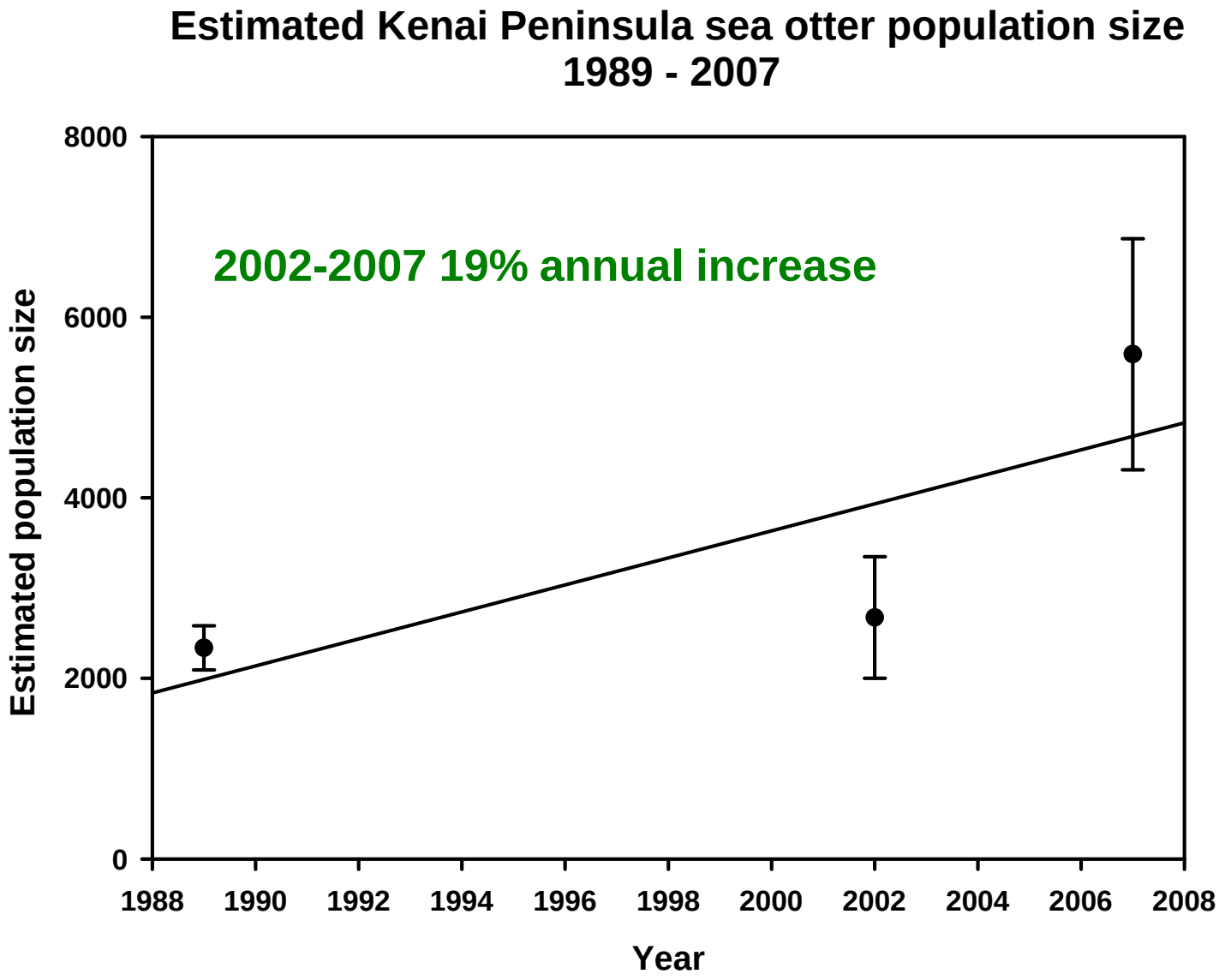
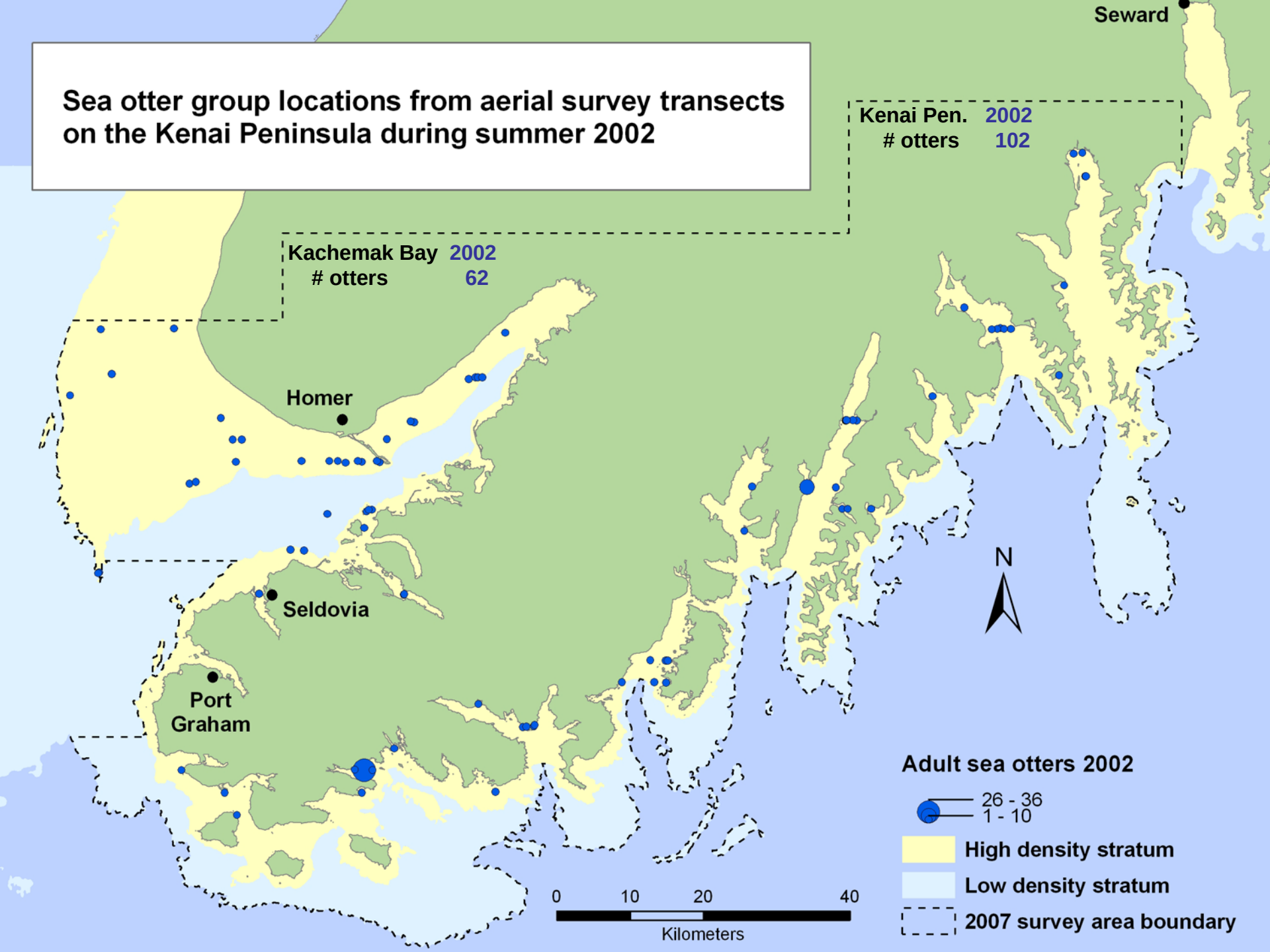
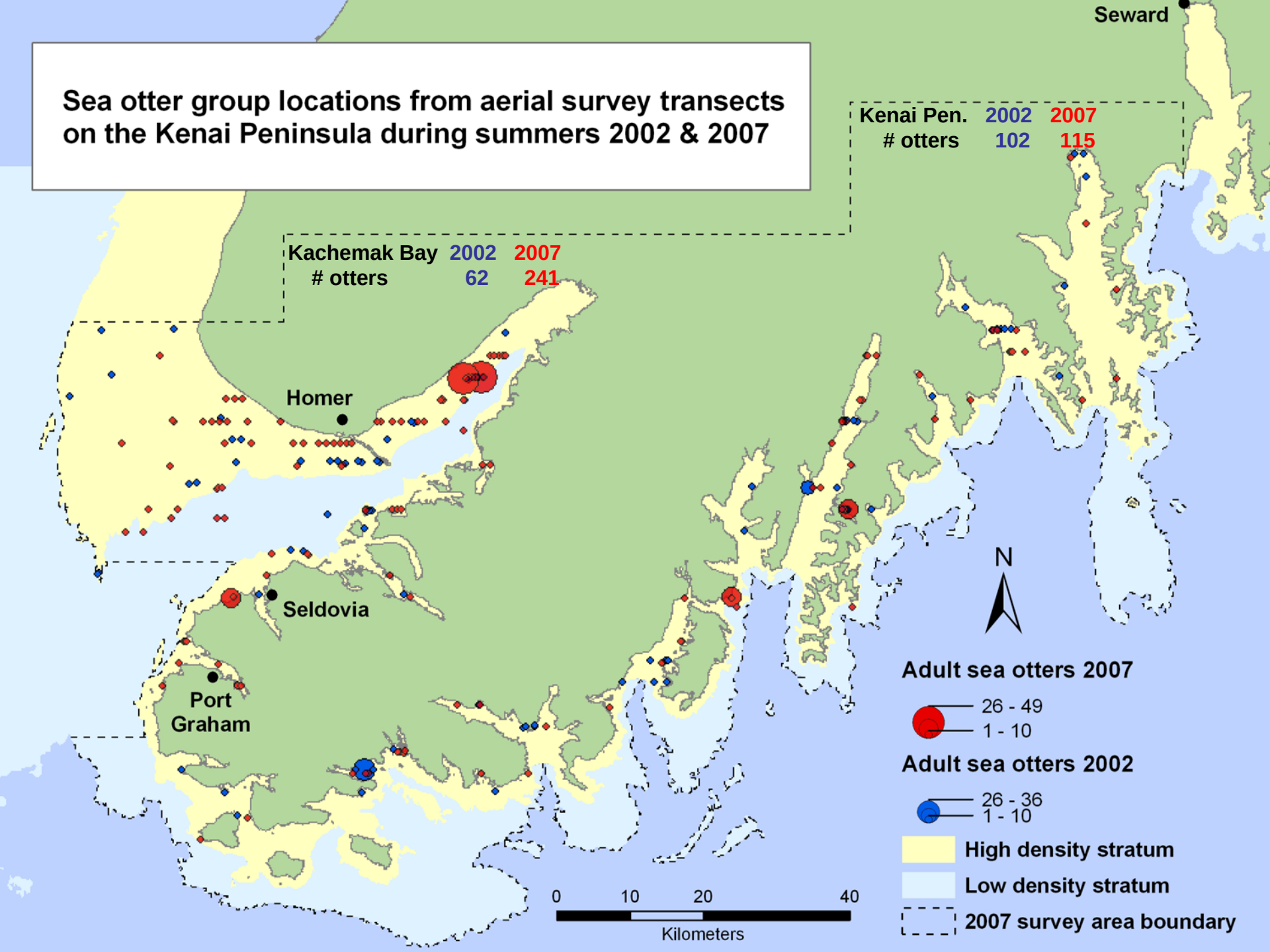
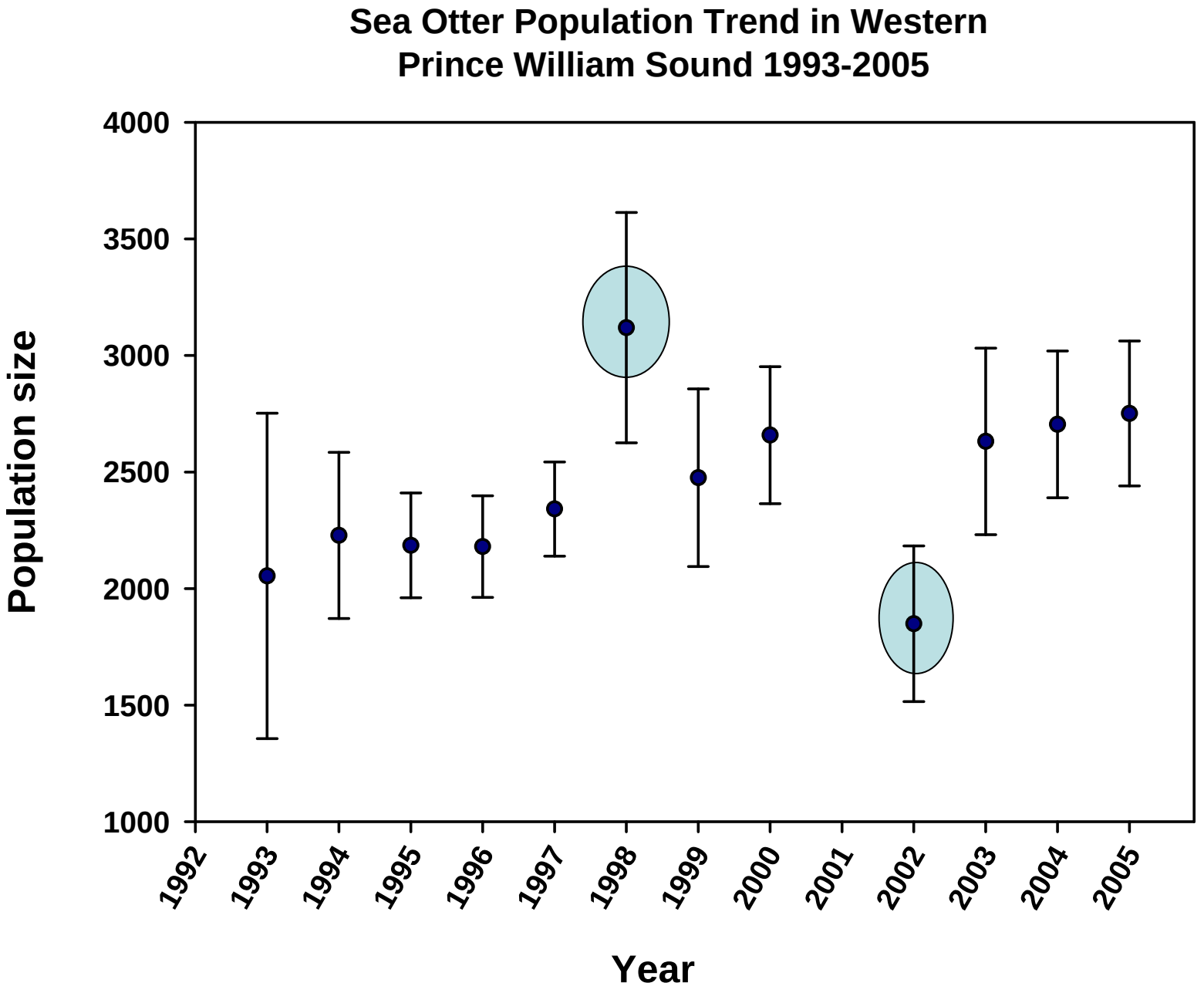
Trend in sea otter distribution and abundance Kenai Peninsula 1989-2007

Sea otter aerial surveys

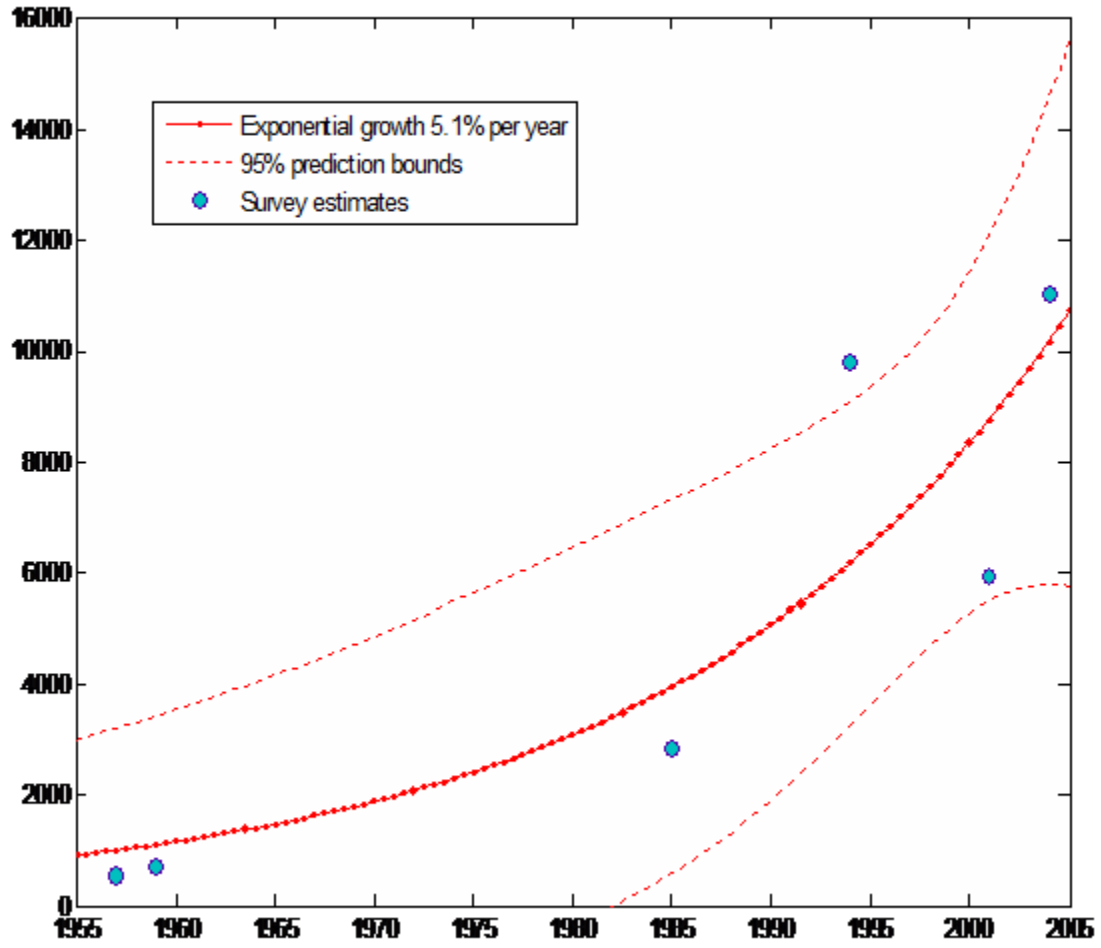

Estimated Kenai Peninsula sea otter population size
1989 - 2007
2002-2007 19% annual increase
Estimated population size
8000
6000
4000
2000
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year


Sea otter group locations from aerial survey transects on the Kenai Peninsula during summer 2002
Seward
Kenai Pen. 2002
otters 102
Kachemak Bay 2002
otters 62
Homer
Seldovia
Port Graham
N
0 10 20 40
Kilometers
Adult sea otters 2002
26 - 36
1 - 10
High density stratum
Low density stratum
2007 survey area boundary


Sea otter group locations from aerial survey transects on the Kenai Peninsula during summers 2002 & 2007
Seward
Kenai Pen. 2002 2007
otters 102 115
Kachemak Bay 2002 2007
otters 62 241
Homer
Seldovia
Port Graham
N
Adult sea otters 2007
26 - 49
1 - 10
Adult sea otters 2002
26 - 36
1 - 10
High density stratum
Low density stratum
2007 survey area boundary
0 10 20 40
Kilometers

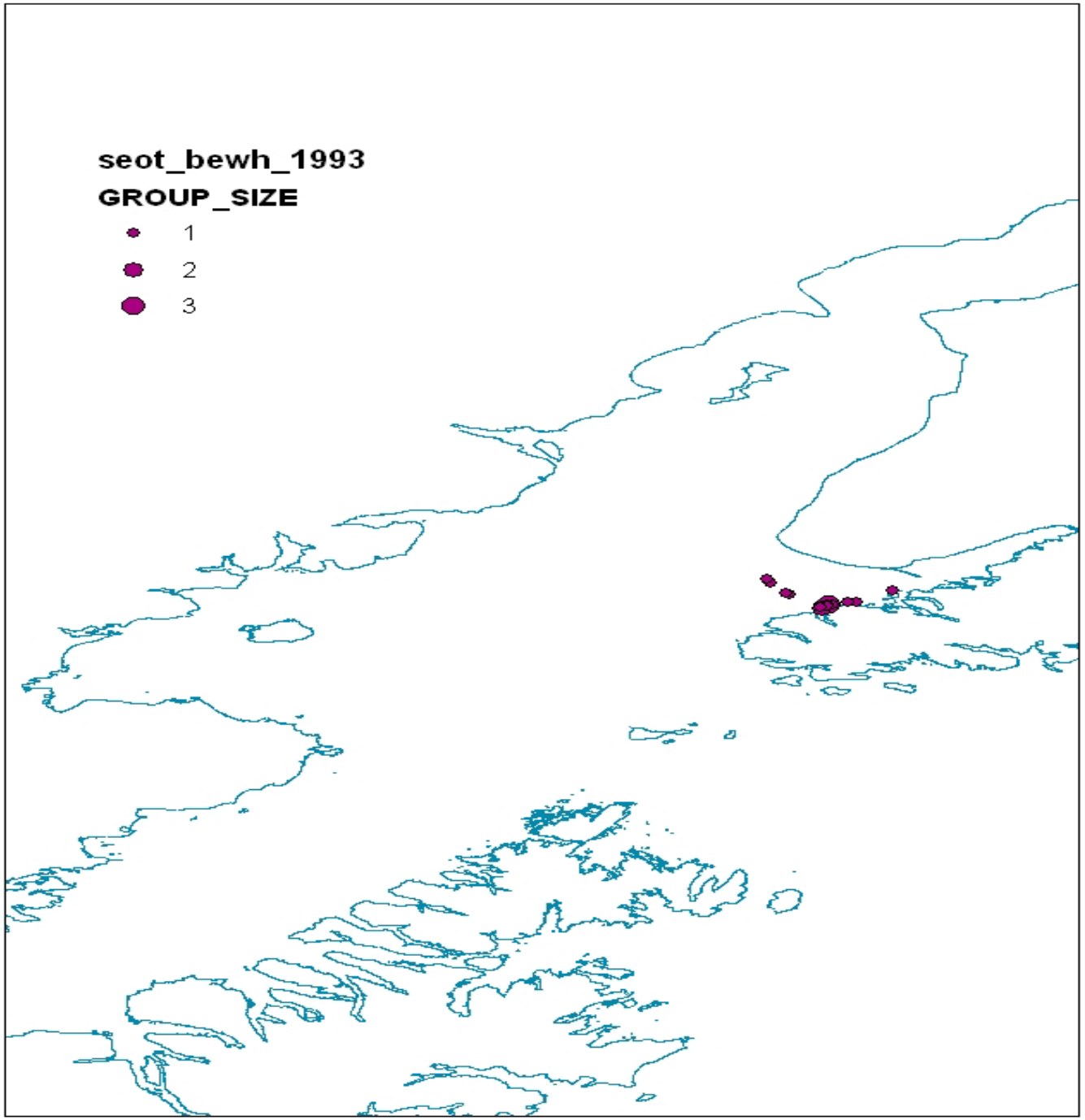

Sea Otter Population Trend in Western
Prince William Sound 1993-2005
Population size
4000
3500
3000
2500
2000
1500
1000
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Year

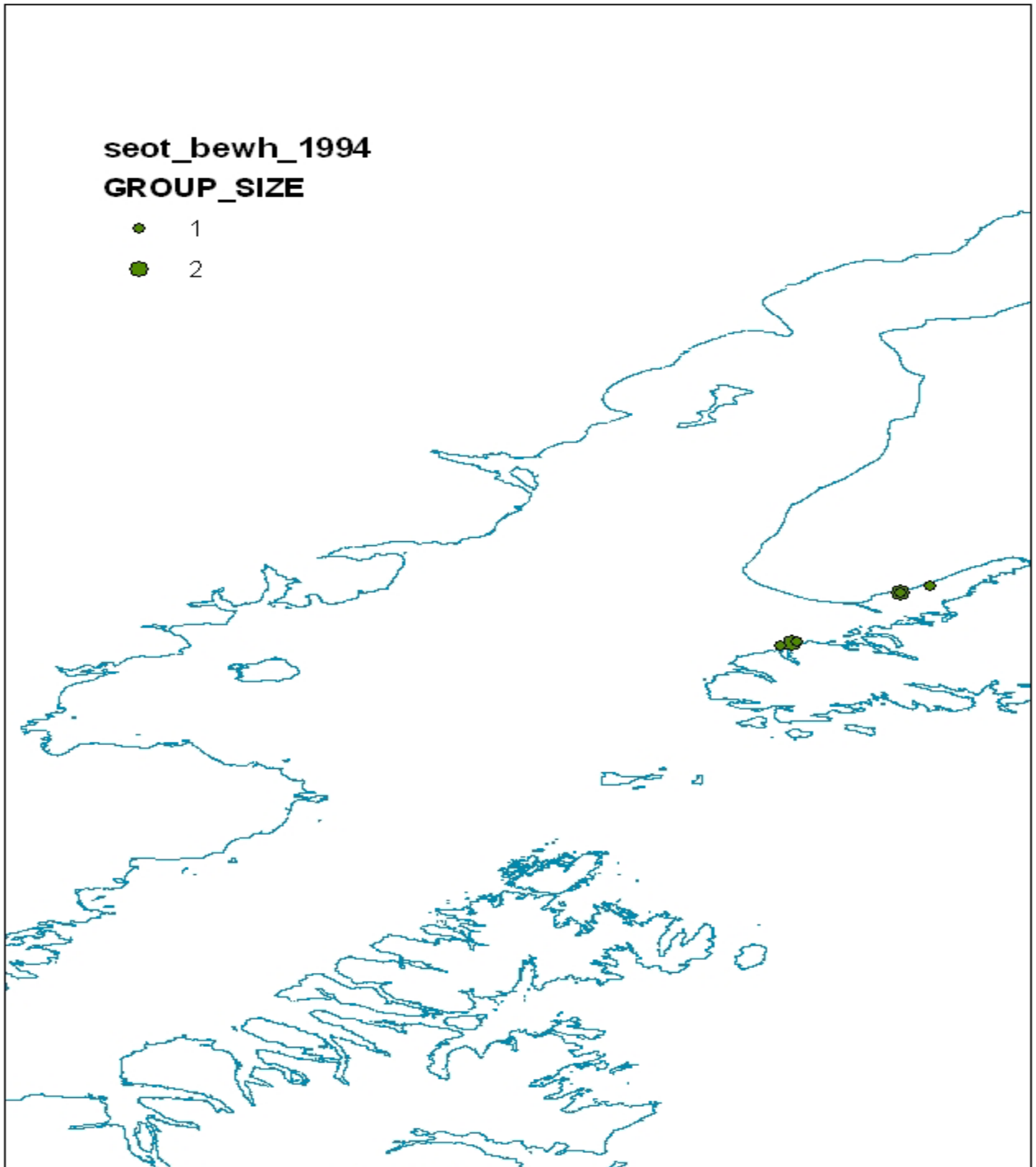
Exponential growth curve for Kodiak Island 1956-2004

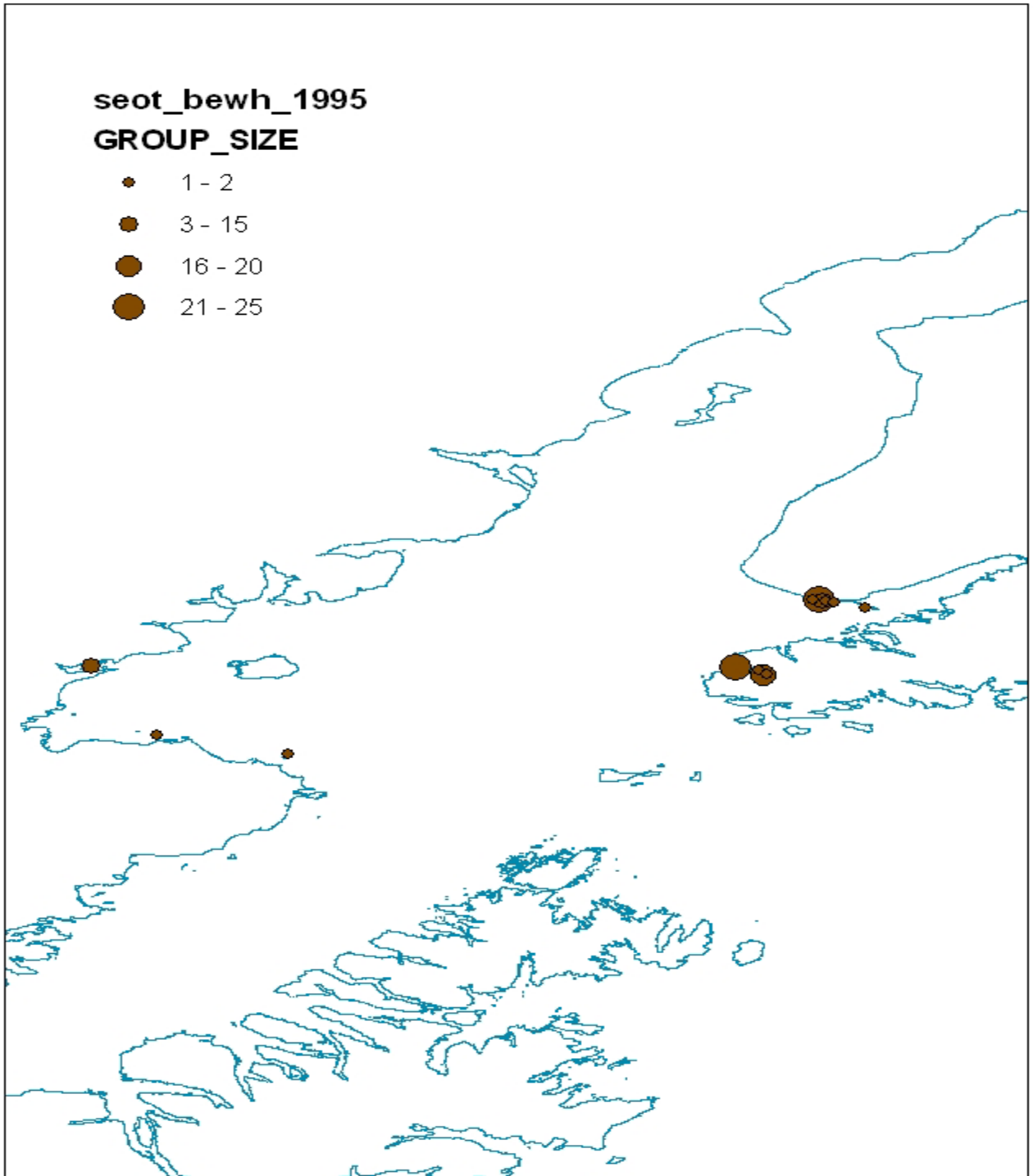


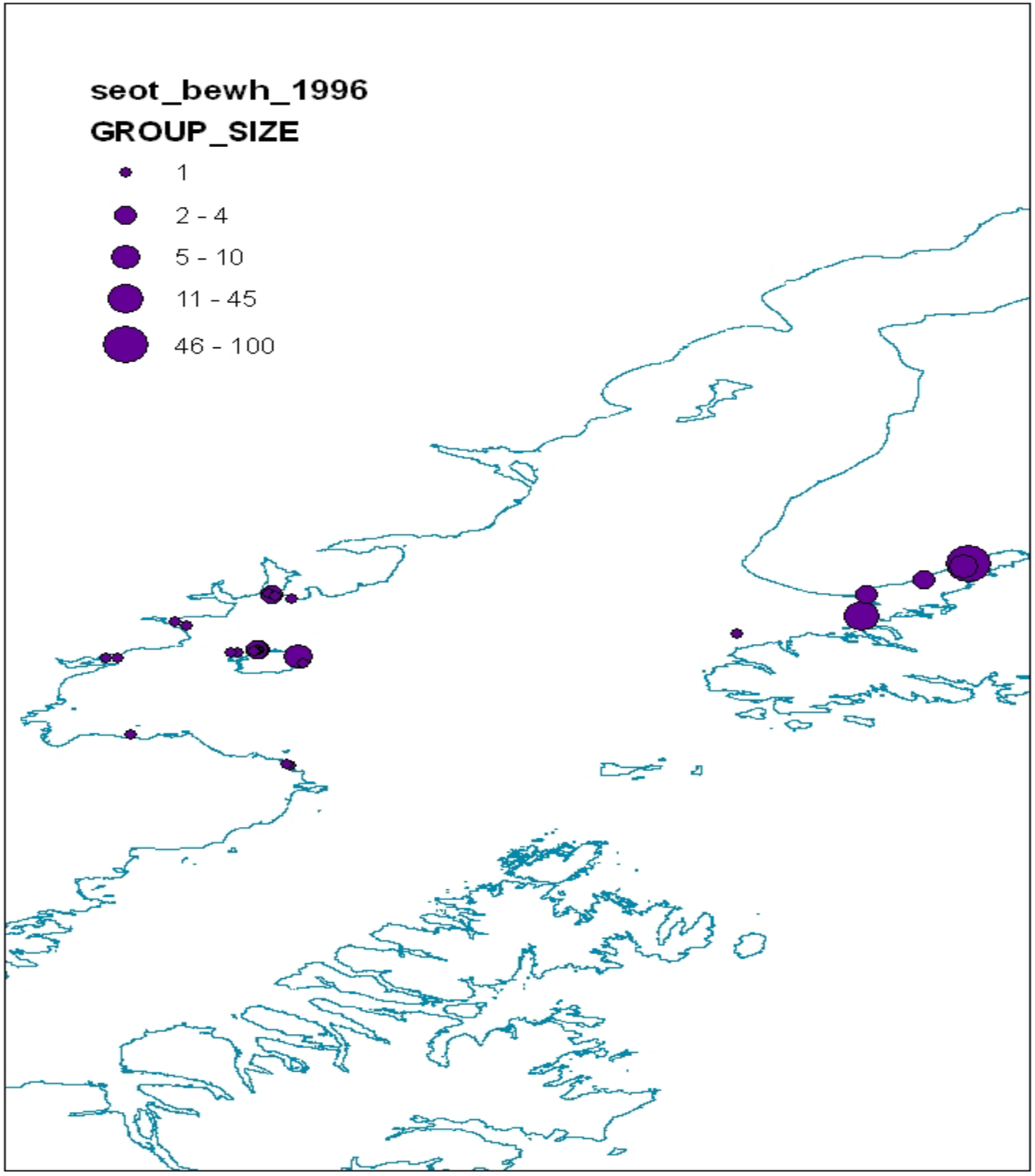
Trends in sea otter distribution and abundance lower Cook Inlet, 1993-2005

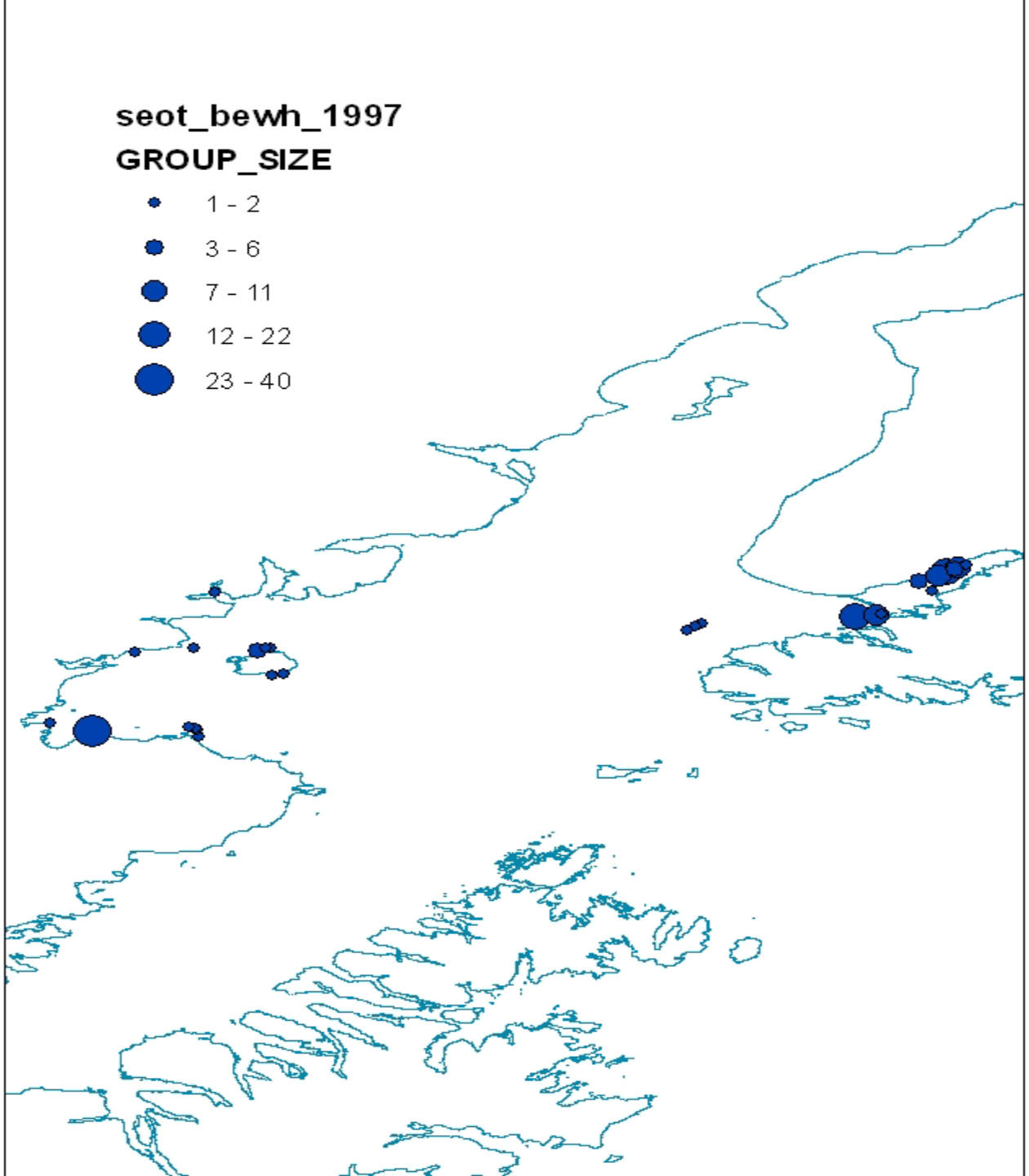
NMFS Beluga whale surveys

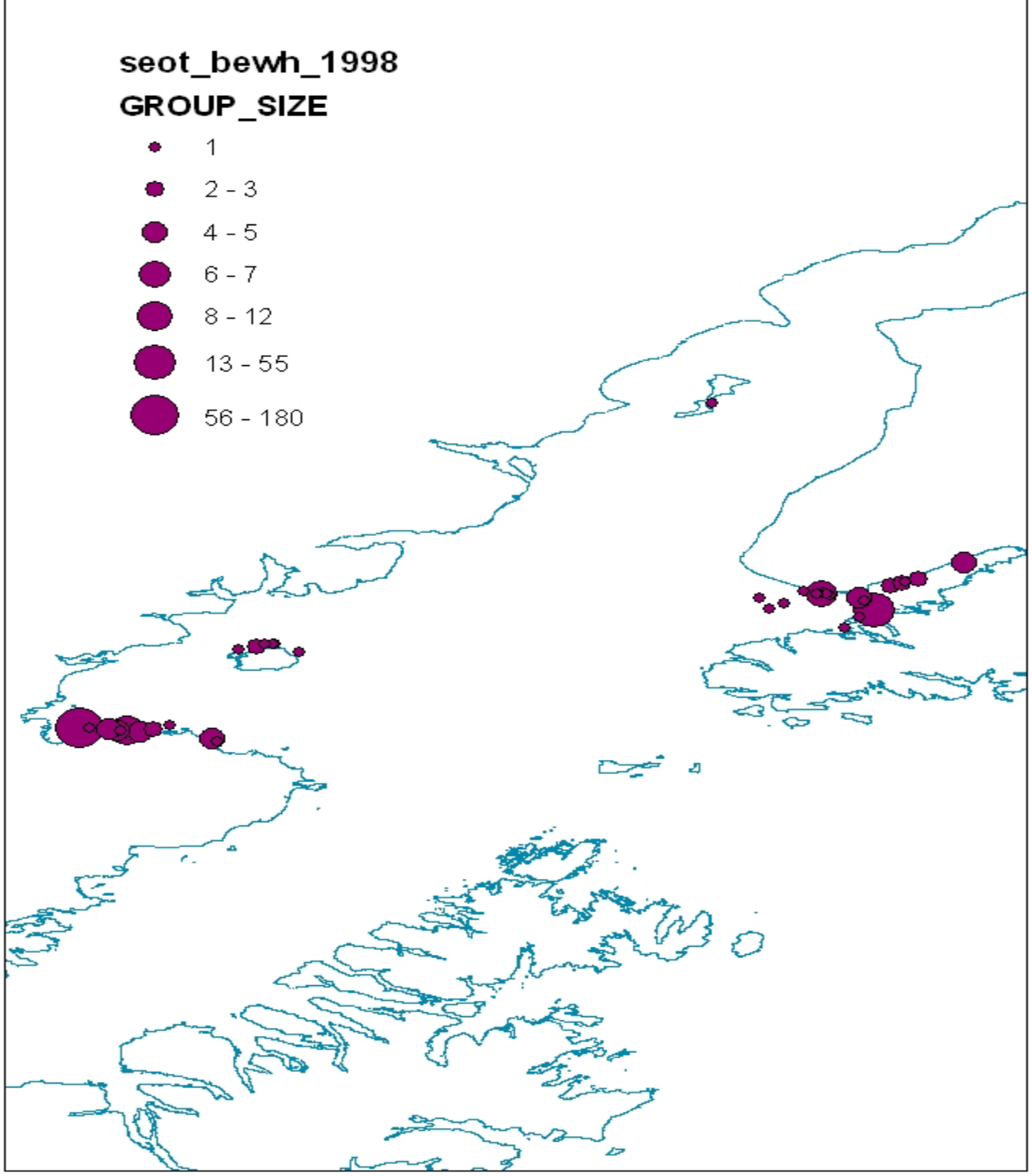

seot_bewh_1993
GROUP_SIZE
1
2
3

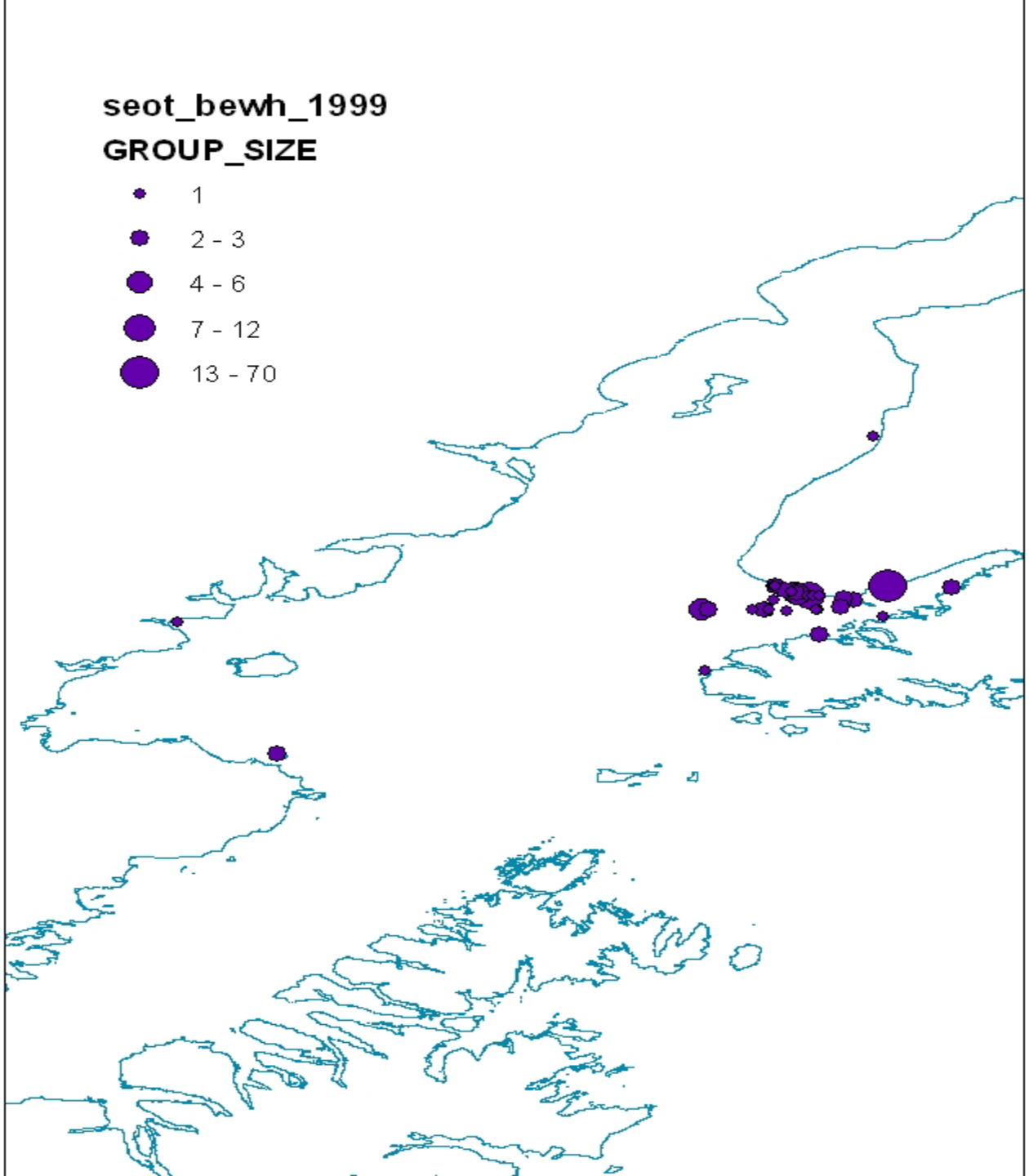

seot_bewh_1994
GROUP_SIZE
1
2

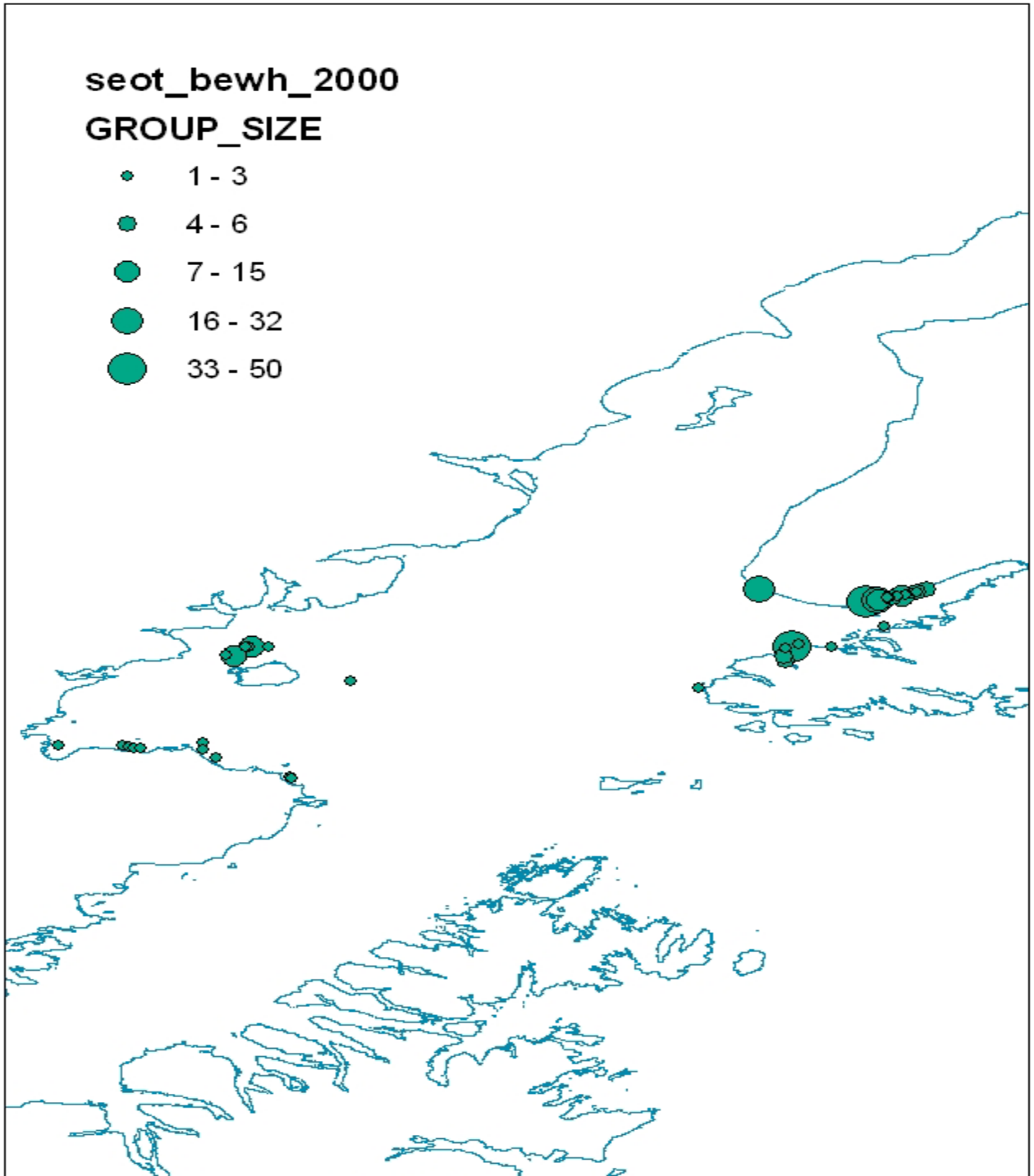

seot_bewh_1995
GROUP_SIZE
1 - 2
3 - 15
16 - 20
21 - 25

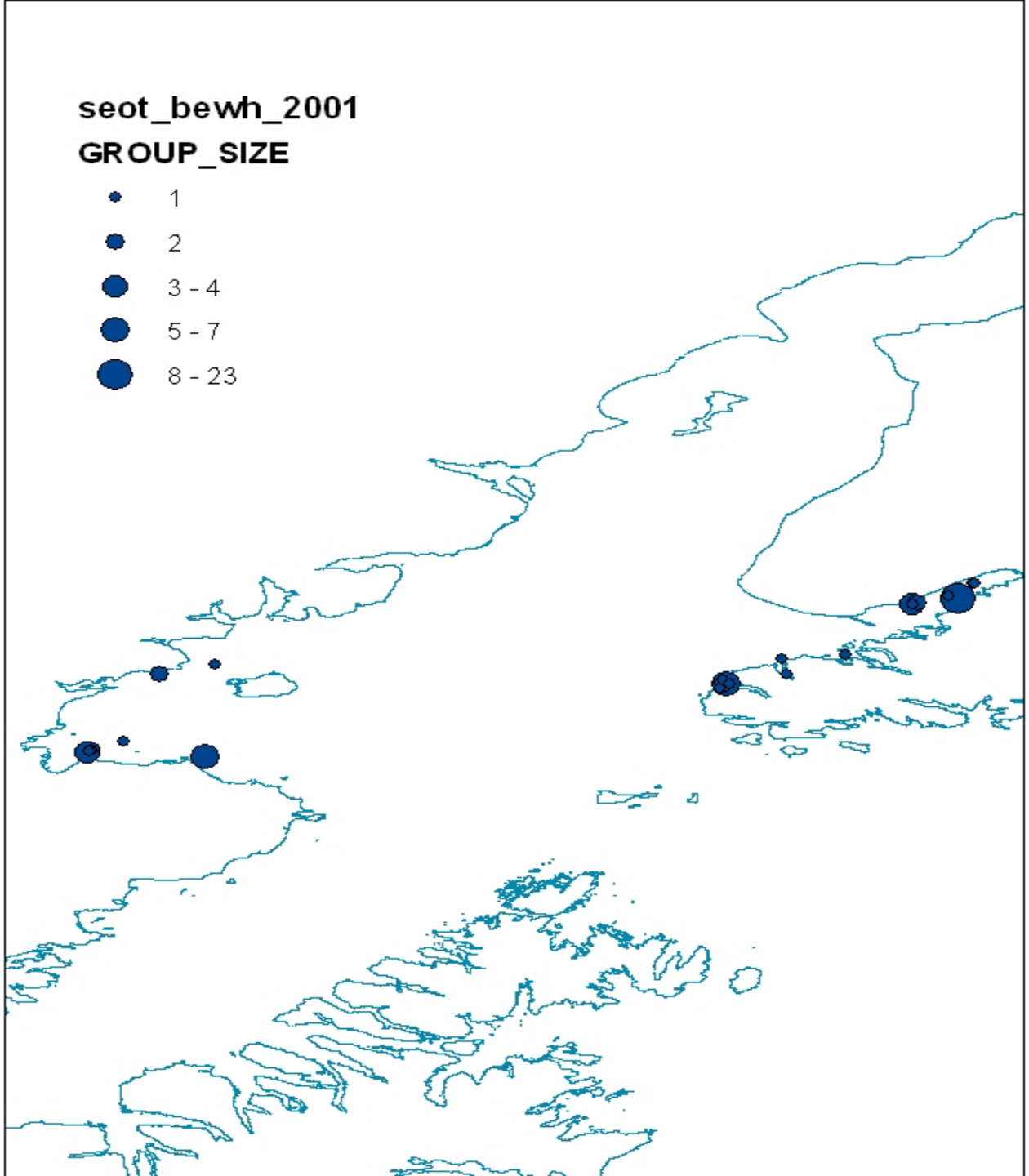

seot_bewh_1996
GROUP_SIZE
1
2 - 4
5 - 10
11 - 45
46 - 100

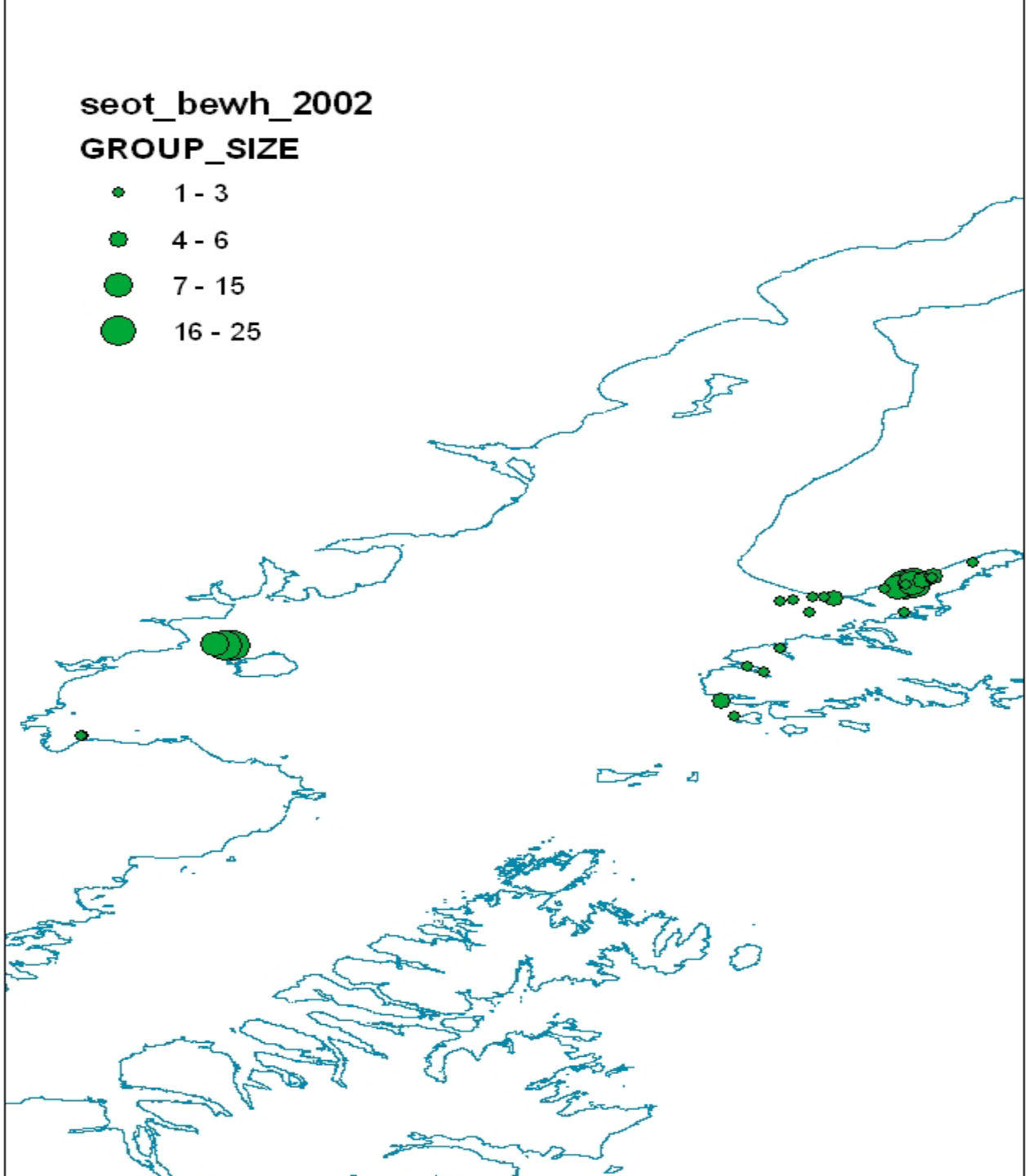

seot_bewh_1997
GROUP_SIZE
1 - 2
3 - 6
7 - 11
12 - 22
23 - 40

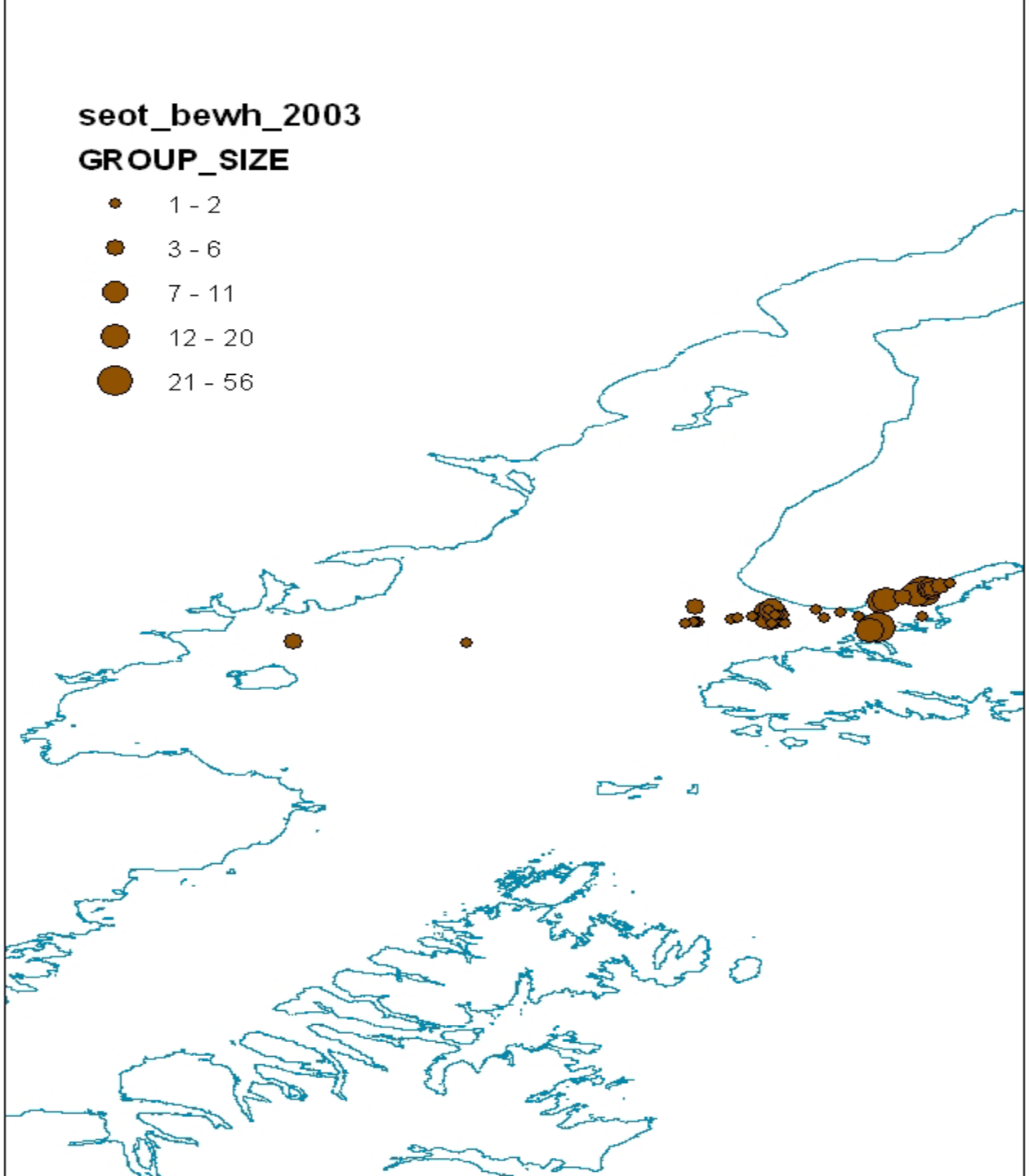

seot_bewh_1998
GROUP_SIZE
1
2 - 3
4 - 5
6 - 7
8 - 12
13 - 55
56 - 180

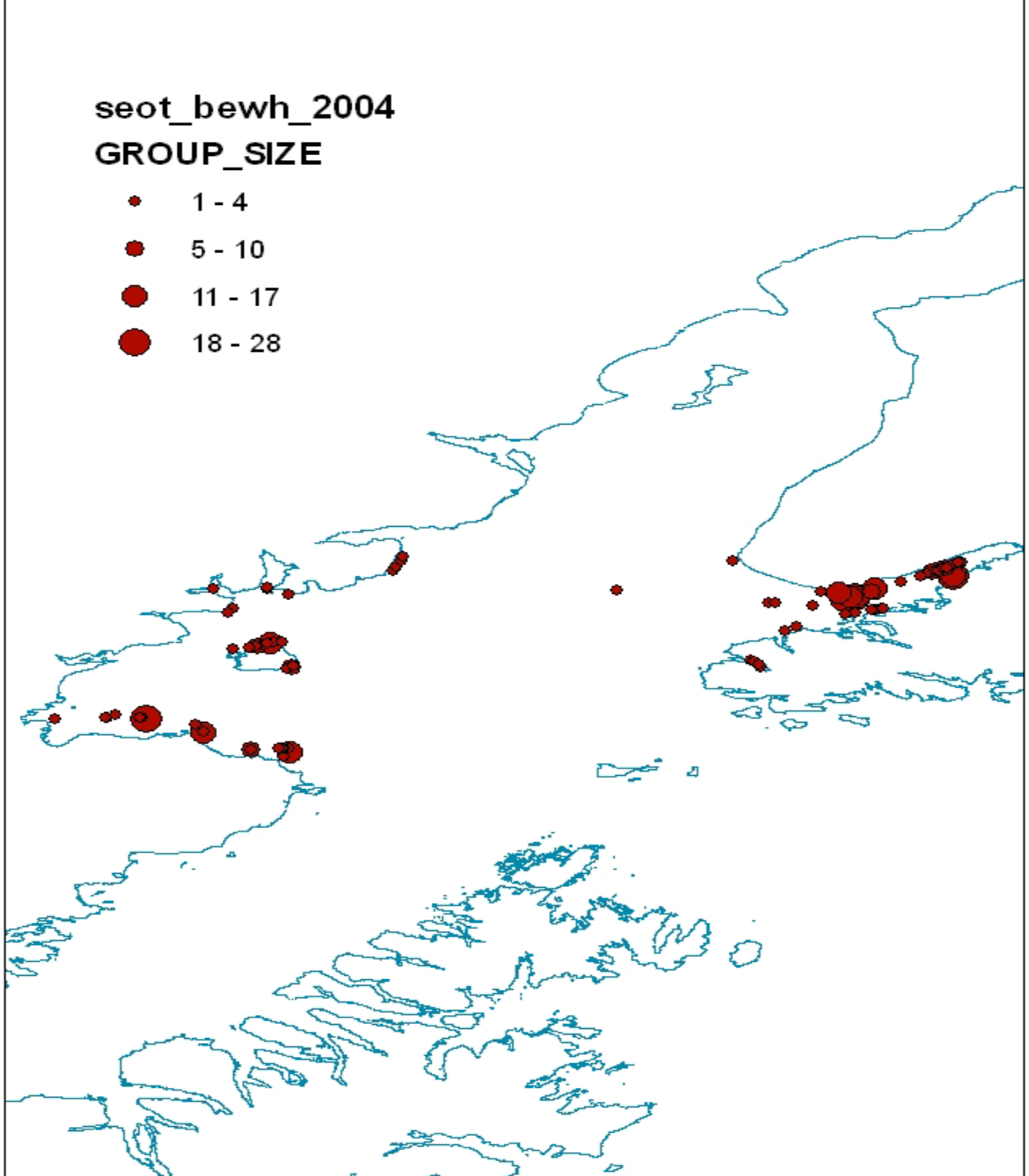

seot_bewh_1999
GROUP_SIZE
1
2 - 3
4 - 6
7 - 12
13 - 70

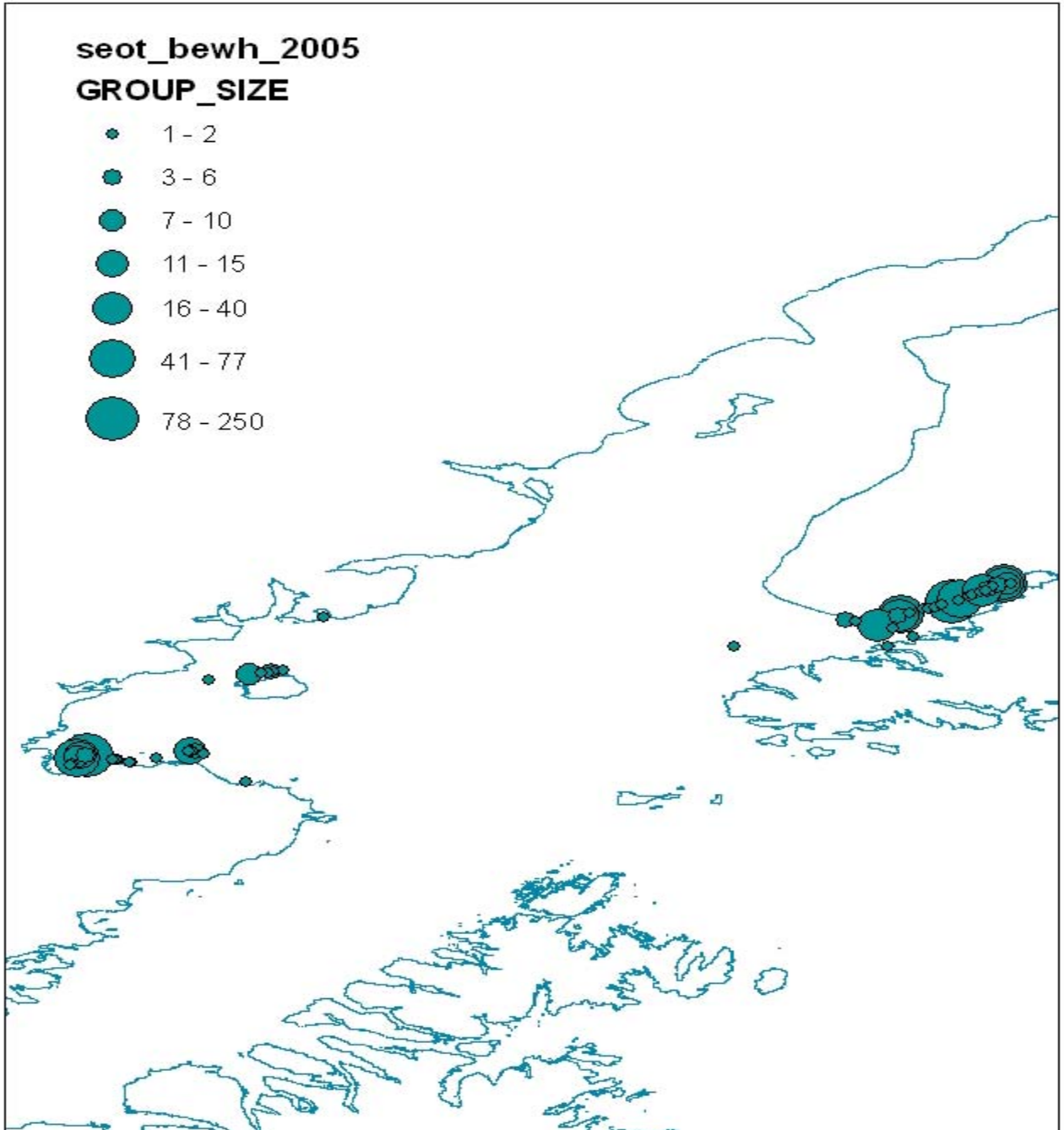

seot_bewh_2000
GROUP_SIZE
1 - 3
4 - 6
7 - 15
16 - 32
33 - 50


seot_bewh_2001
GROUP_SIZE
1
2
3 - 4
5 - 7
8 - 23

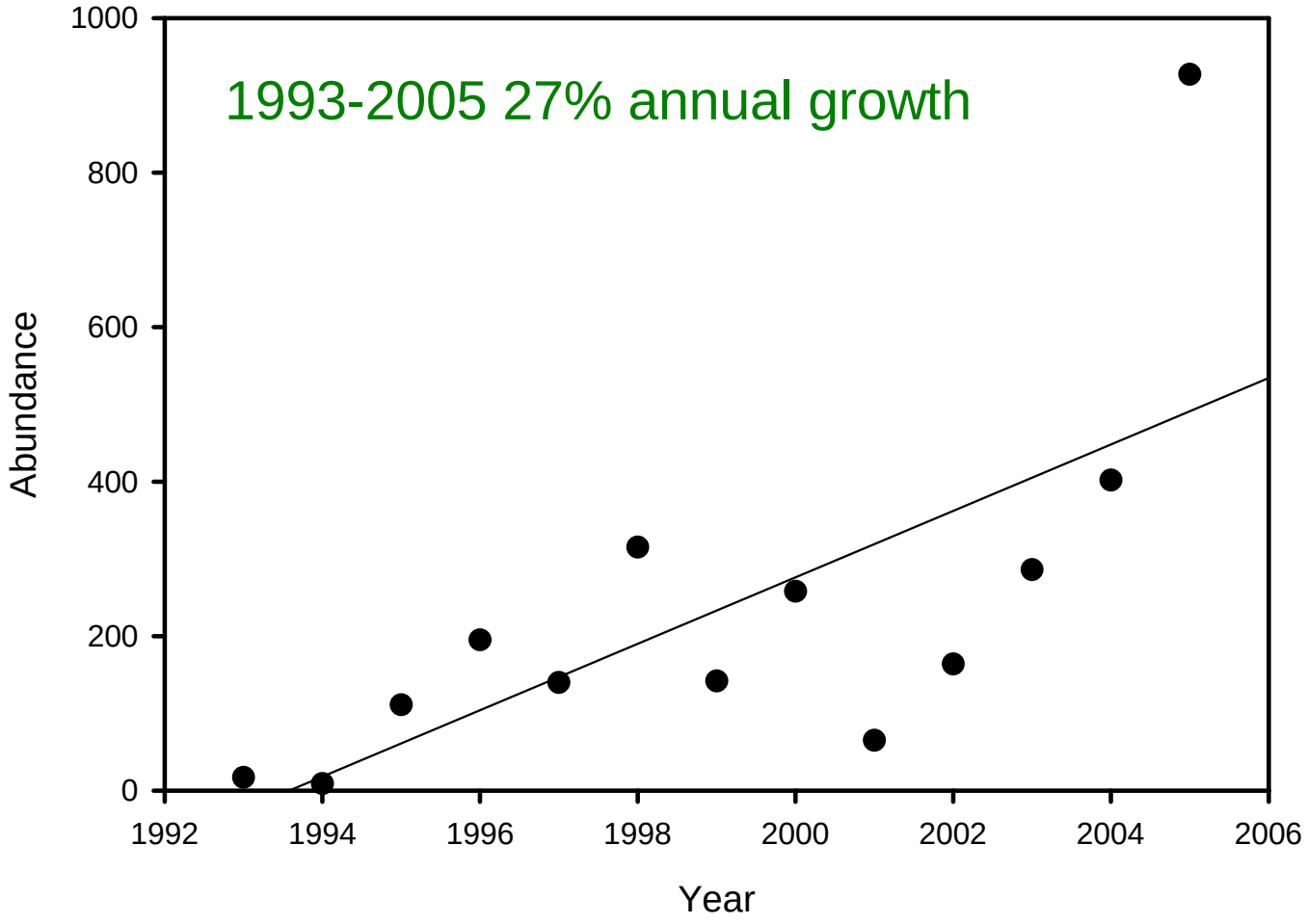

seot_bewh_2002
GROUP_SIZE
1 - 3
4 - 6
7 - 15
16 - 25


seot_bewh_2003
GROUP_SIZE
1 - 2
3 - 6
7 - 11
12 - 20
21 - 56

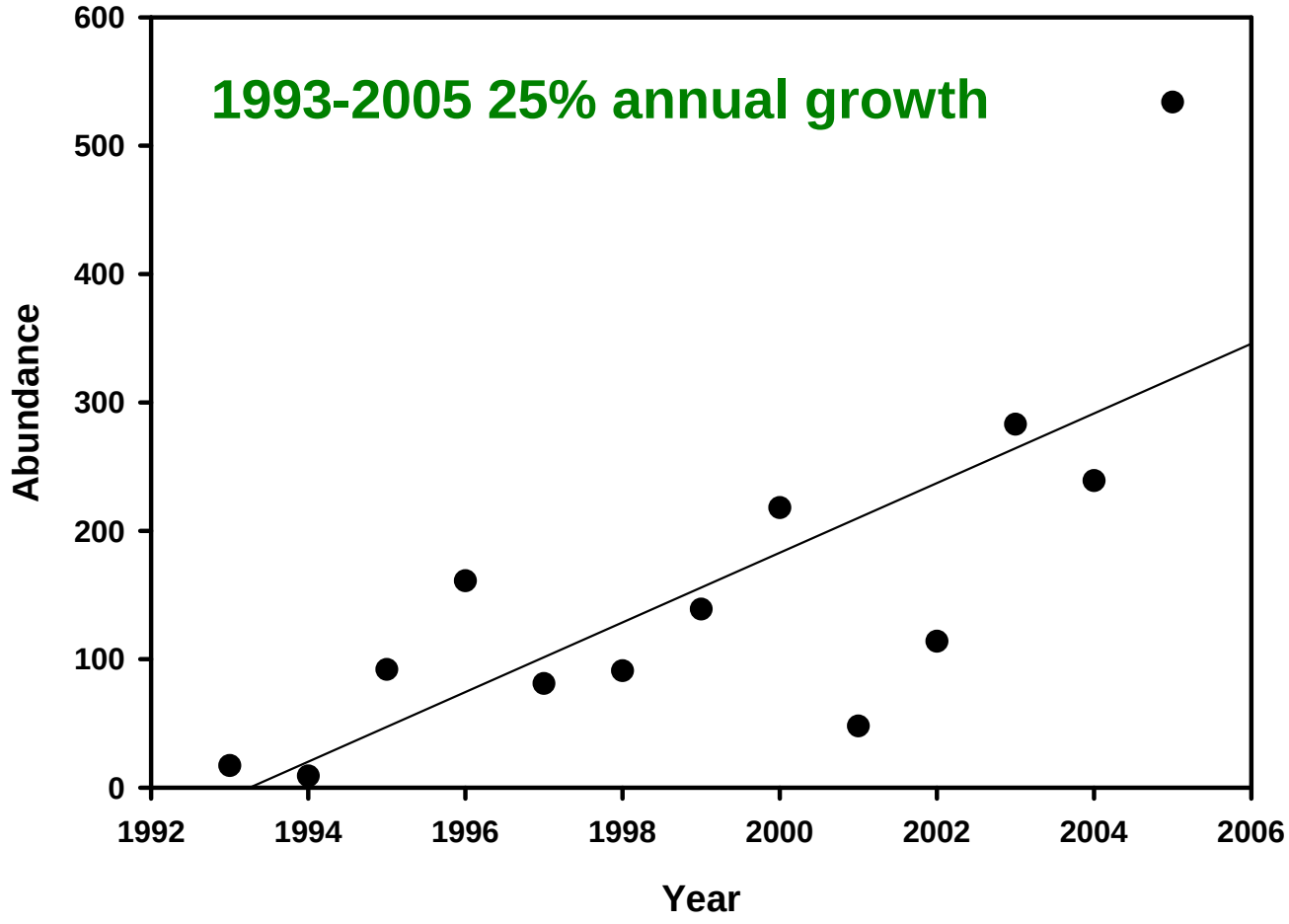

seot_bewh_2004
GROUP_SIZE
1 - 4
5 - 10
11 - 17
18 - 28


seot_bewh_2005
GROUP_SIZE
1 - 2
3 - 6
7 - 10
11 - 15
16 - 40
41 - 77
78 - 250

Sea otter abundance in Cook Inlet 1993-2005
Beluga whale survey data



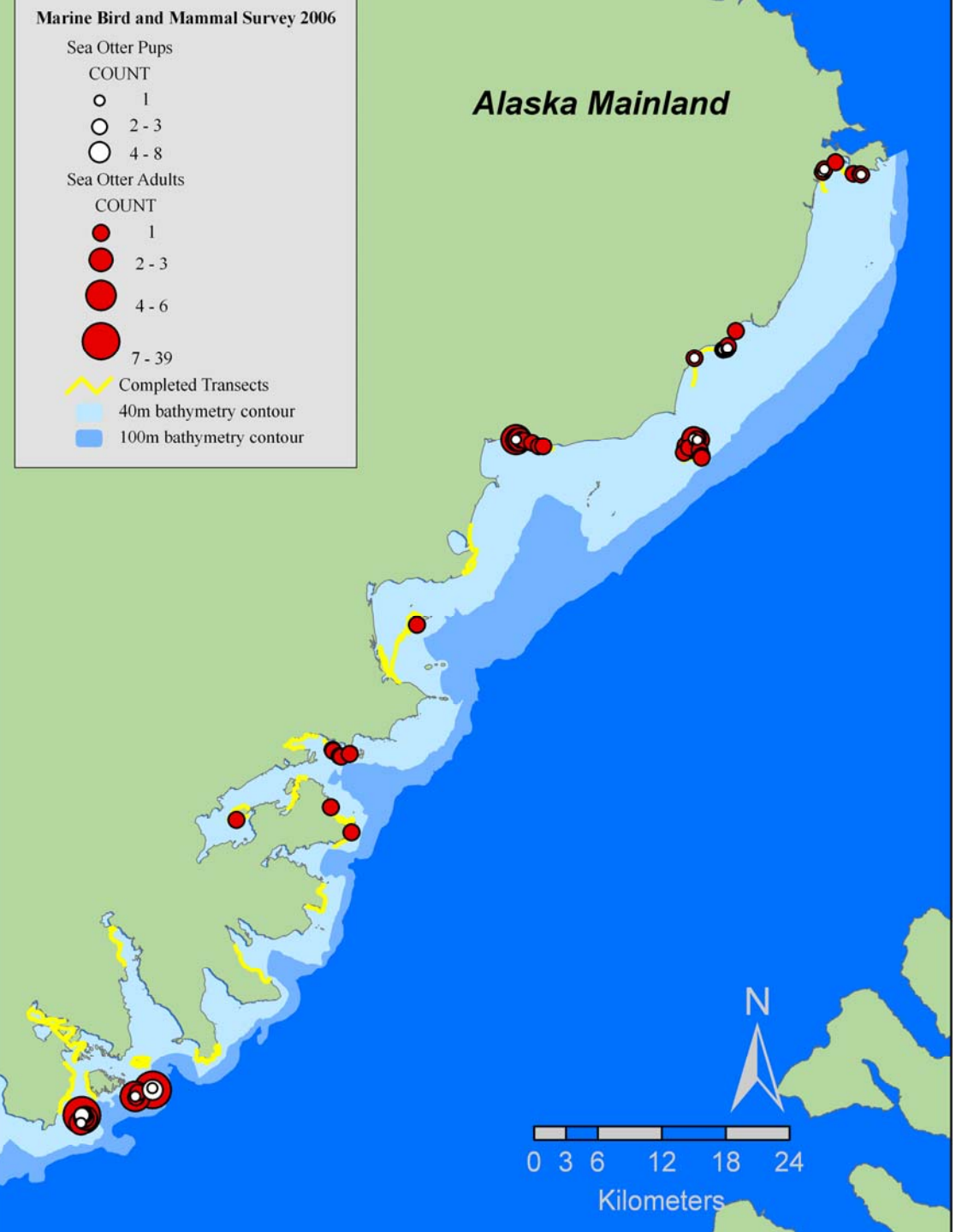
Sea otter abundance in Kachemak Bay 1993-2005
Beluga whale survey data



Summary

- Two independent surveys indicate high rates of sea otter population growth in Cook Inlet (Kachemak and Kamishak Bays) (20-25%/yr)

- Caution should be applied in interpreting any single data point



2006 sea otter abundance and distribution Katmai NP

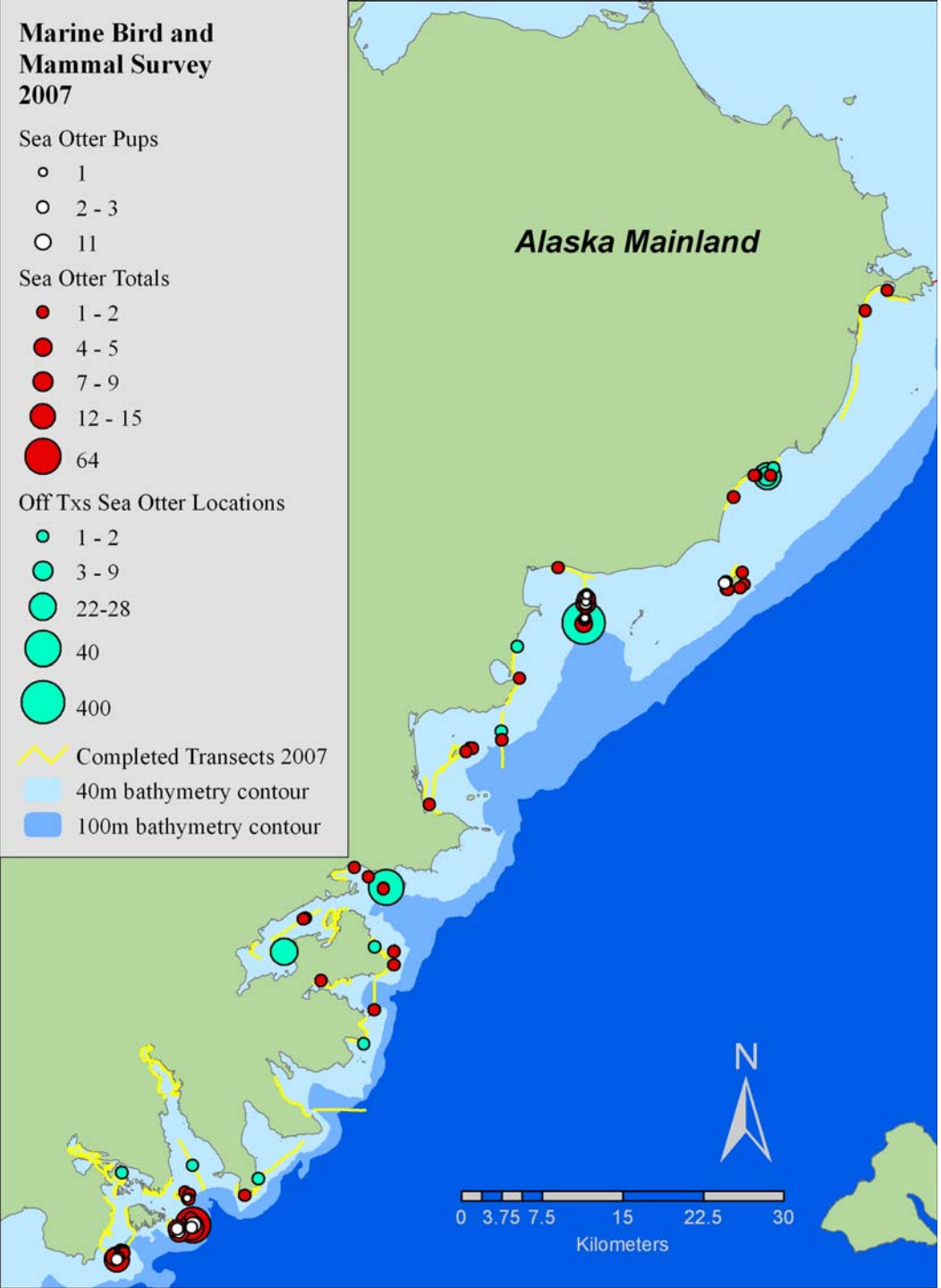
24 systematically located coastal tx, 200 m wide (20% of ~637 km of coastline sampled)

- Mean length 6.5 km range 1.2-16.5 km

- **Mean sea otter density = 6.2/km^2 (se = 2.8)**

- Range = 0 – 51.4/km^2

- 14 of 24 tx w/o sea otters



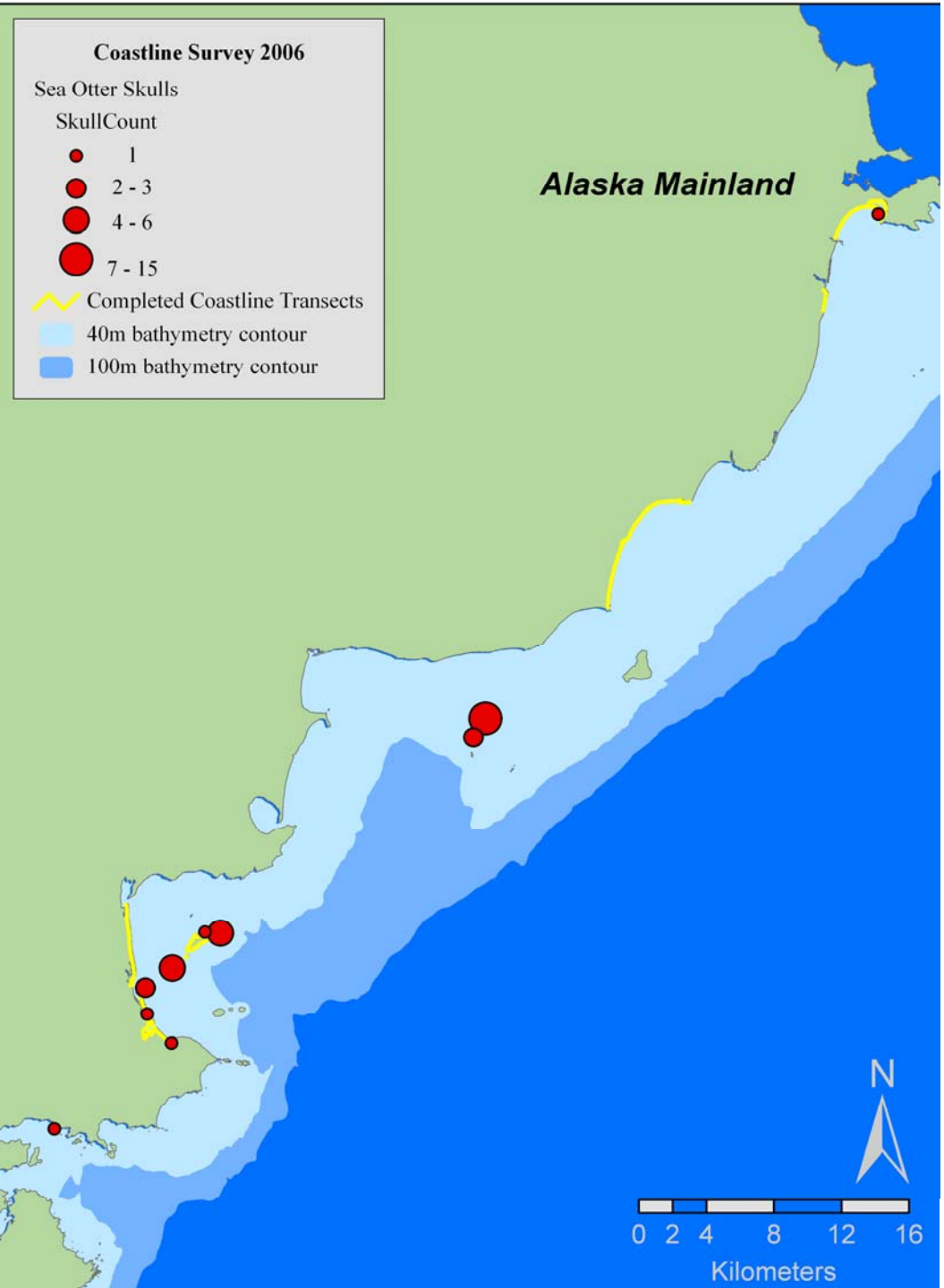
2007 sea otter abundance and distribution Katmai NP

30 systematically located coastal tx, 200 m wide (20% of ~637 km of the coastline) and 10 pelagic tx, 200m wide were sampled

- Mean length 5.5 km range 1.0 - 15.1 km

- **Mean sea otter density = 4.8/km^2 (se = 2.5)**

- Range = 0 – 90.8/km^2
- 21 of 40 tx w/o sea otters
- 519 sea otters counted off tx with one group of 400



2006 sea otter carcass abundance and distribution

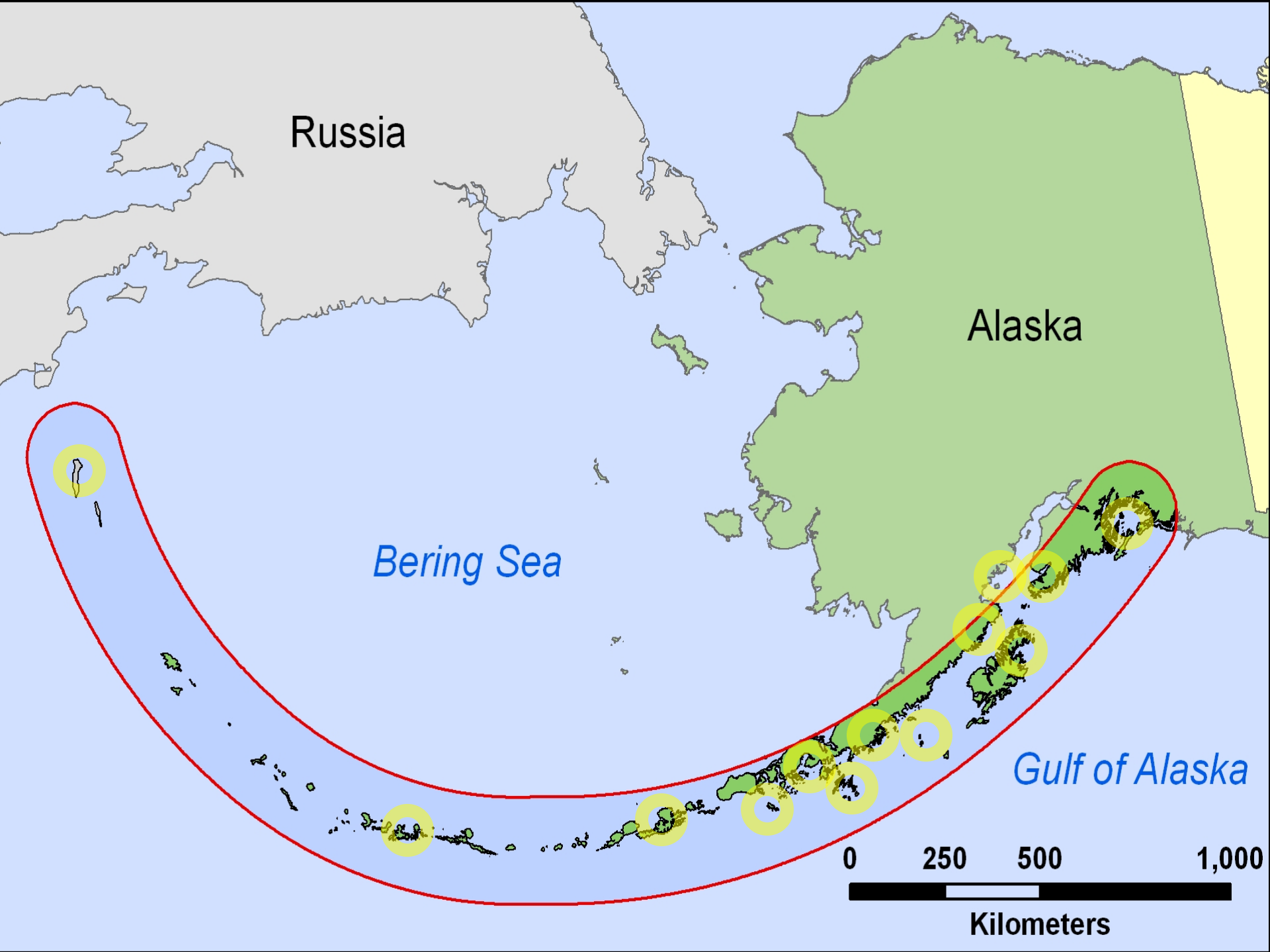
- 21 km of shoreline surveyed
- 37 sea otter carcasses recovered
  32 carcasses located on ~5 km of offshore island shoreline
- 5 carcasses on 16 km of mainland shoreline
- Mean carcass recovery rate = 1.8 carcasses/km

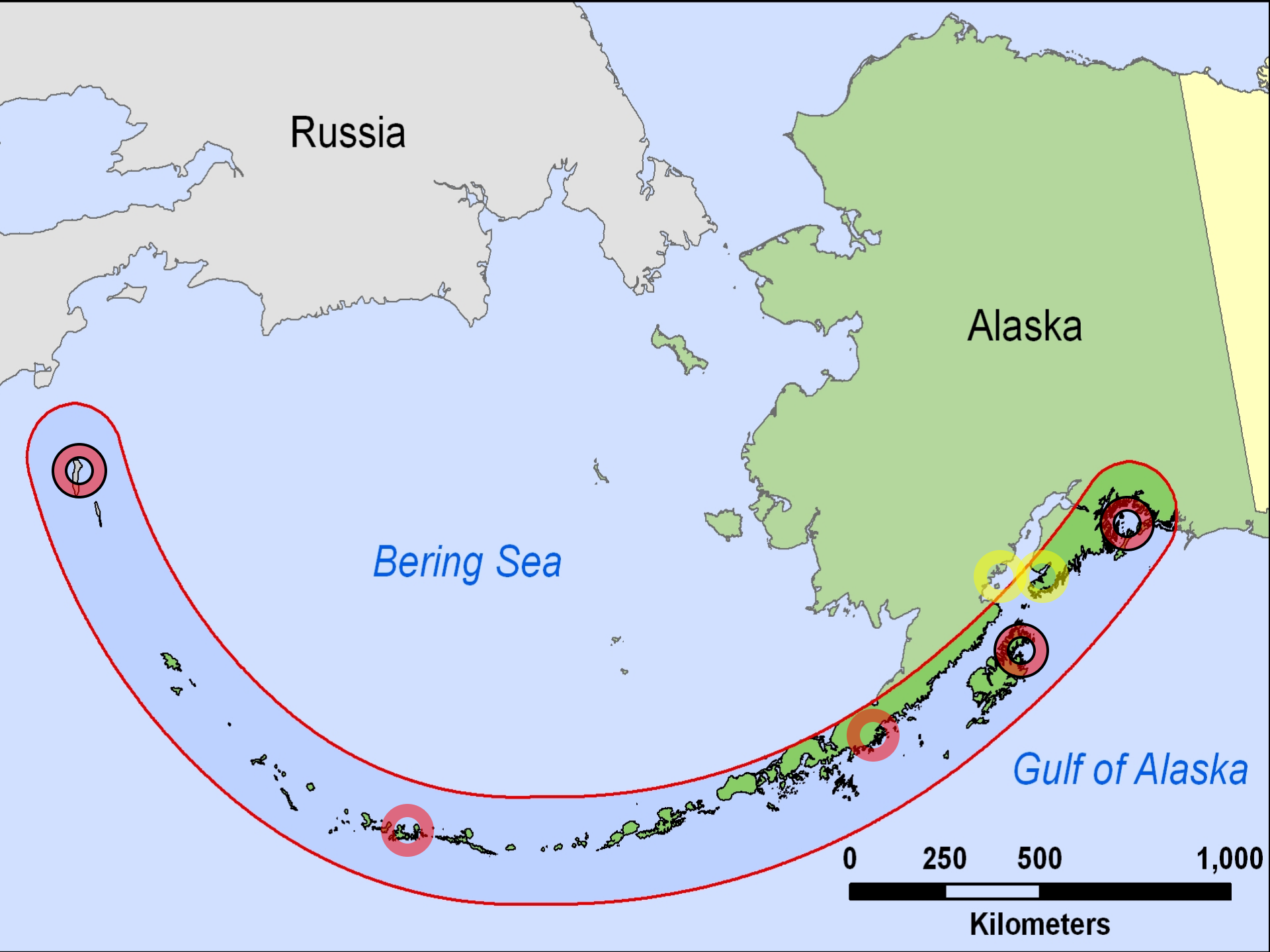
2007 sea otter carcass abundance

- 10 km of shoreline surveyed
- 44 sea otter carcasses recovered
  37 carcasses located on ~5 km of offshore island shoreline
- 7 carcasses on 5 km of mainland shoreline
- Mean carcass recovery rate = 4.4 carcasses/km

Delineating the geographic extent, cause, and constraints to recovery in the Threatened SW stock of sea otters in Alaska

- An NPRB funded research project
- Concept: Use the characterization of the C/W Aleutian nearshore community (so density/dist, carcasses, diet, and benthic community structure) to delineate extent, similarity of cause, and constraints
- Phase one: Conduct intensive sampling of so population abundance/distribution (live and dead), diet, and benthic community structure at ~ 12 sites in 2008, including data from ongoing or recently completed work
- Phase two: Based on outcome of Phase one, select 3 sites for capture of individuals for assessment of condition, health, and disease in 2009


Russia
Alaska
Bering Sea
Gulf of Alaska
0
250
500
1,000
Kilometers


Russia
Alaska
Bering Sea
Gulf of Alaska
0
250
500
1,000
Kilometers

Locations and data collection protocols SW AK sea otters 2008/2009

	Bering	Cen. Aleut	Fox	Sanak	Pavlov	Shum	Chignik	Semidi	Kat	Kod	Kam	Kac	PWS
Density	X	X			X	X		X	X	X	X	X	X
Carcass	X	X							X		X		X
Prey	X	X											X
Energy		X							X	X			X
Disease	X	X								X			X